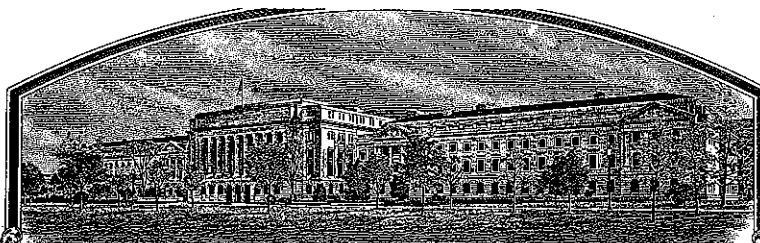


No.

200300261



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER-PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLACEMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'PH9HP'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this sixth day of March, in the year two thousand and six.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service


Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
 SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE
APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Pioneer Hi-Bred International, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME		3. VARIETY NAME PH9HP	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 7301 NW 62nd Avenue Johnston, IA 50131-0085		5. TELEPHONE (include area code) 515/270-4051		FOR OFFICIAL USE ONLY VPPO NUMBER 2003 0 0261	
		6. FAX (include area code) 515/253-2125			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION IOWA		9. DATE OF INCORPORATION March 5, 1999	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Steven R. Anderson Research and Product Development P.O. Box 85 Johnston, IA 50131-0085				FILING AND EXAMINATION FEES: \$ 3652.00 DATE 5/28/03 CERTIFICATION FEE: \$ 768.00 DATE 2/21/2006	
11. TELEPHONE (Include area code) 515/270-4051		12. FAX (Include area code) 515/253-2125		13. E-MAIL steven.anderson@pioneer.com	
14. CROP KIND (Common Name) CORN					
15. GENUS AND SPECIES NAME OF CROP Zea Mays					
16. FAMILY NAME (Botanical) Gramineae				17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)					
19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no", go to item 22)				20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)					
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)				23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
24. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties					
SIGNATURE OF OWNER 				NAME (Please print or type) Steven R. Anderson	
NAME (Please print or type) Steven R. Anderson				CAPACITY OR TITLE Research Scientist	
CAPACITY OR TITLE Research Scientist				DATE 5/27/2003	

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>

ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.
21. **CONTINUED FROM FRONT** (Please provide a statement as to the limitation and sequence of generations that may be certified.)

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Hybrid produced from PH9HP first sold in Mexico May, 2002.

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

Priority is claimed to Mexican PVP application number 000487 filed on June 27, 2002 by HIBRIDOS PIONEER DE MEXICO S.A. DE C.V.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center--East, Beltsville, MD 20705.

Telephone: (301) 504-8089. <http://www.ams.usda.gov/lsg/seed.htm>

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

ST-470 (02-10-2003) designed by the Plant Variety Protection Office with Word 2000. Replaces former versions of STS-470, which are obsolete.

Exhibit A. Origin and Breeding History

Pedigree: PH0PD/PHWV2+PHKM6*PH09B)22125X

Pioneer Line PH9HP, *Zea mays L.*, a white endosperm, flint-like dent corn inbred, was developed by Pioneer Hi-Bred International, Inc. from PH0PD/PHWV2+PHKM6*PH09B using the pedigree method of plant breeding. A Mexican PVP was filed on June 27, 2002 with the application number 000487. Variety PH09B (U.S. PVP Certificate No. 9700218), PHWV2 (Mexico PVP submitted April 28, 1997), PHKM6 was derived from a synthetic called Gemiza from CIMMYT, and PH0PD (Mexico PVP submitted June 3, 1998) is proprietary inbred line of Pioneer Hi-Bred International, Inc. Selfing was practiced from the above hybrid for seven generations using pedigree selection. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Guadalajara, Mexico, as well as other Pioneer research locations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations again made for uniformity.

Variety PH9HP has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed for more than ten generations with careful attention paid to selection criteria and uniformity of plant type to assure genetic homozygosity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity and stability, and for 3 generations during the final stages of inbred development and seed multiplication. Very high standards for genetic purity have been established morphologically using field observations and electrophoretically using sound lab molecular marker methodology.

No variant traits have been observed or are expected in PH9HP.

The criteria used in the selection of PH9HP were yield, both per se and in hybrid combinations; late season plant health, grain quality, stalk lodging resistance, and kernel size, especially important in production. Other selection criteria include: ability to germinate in adverse conditions; disease and insect resistance; pollen yield and tassel size.

Exhibit A: Developmental history for PH9HP

Season/Year Pedigree Grown	Inbreeding Level of Pedigree Grown
WINTER 1995 PH0PD/PHWV2+PHKM6*PH09B	F1
SUMMER 1996 PH0PD/PHWV2+PHKM6*PH09B)2	F2
WINTER 1997 PH0PD/PHWV2+PHKM6*PH09B)22	F3
SUMMER 1998 PH0PD/PHWV2+PHKM6*PH09B)221	F4
WINTER 1998 PH0PD/PHWV2+PHKM6*PH09B)2212	F5
SUMMER 1999 PH0PD/PHWV2+PHKM6*PH09B)22125	F6
PH0PD/PHWV2+PHKM6*PH09B)22125X	seed F7

*PH9HP was selfed and ear-rowed from F2 through F6 generation.

#Uniformity and stability were established from F5 through F7 generation and beyond when seed supplies were increased.

Exhibit A. ADDENDUM

Variety PH0PD was derived from a synthetic. This synthetic was primarily composed of PHV63 (PVP certificate number 8800039) with some temperate elites. I do not have a list of these temperate elites available from any of the breeders I have been able to work with.

Variety PHWV2 was derived by pedigree selection from a 3-way hybrid. It traces back to derivation from B37, B14, C103LB, FR302W and some tropical hybrids. The tropical hybrids are old Mexican and Cuban hybrids. According to one of our breeders, the Mexican tropical hybrid is probably a double cross with Tuxpeno parents and the old Cuban tropical hybrid is Poy 54 (Federico Poy Company).

PHKM6 was derived from a synthetic named GEMIZA. This synthetic was derived out of CIMMYT population 21. The following are references to Population 21 (Tuxpeño-1), the second of which more completely describes this population, thus making the starting material for PHKM6 publicly known.

1. Morris, M. L., and M. A. López Pereira. 1999. *Impacts of Maize Breeding Research in Latin America, 1966-1997*. Mexico, D. F.: CIMMYT.
2. http://www.cimmyt.org/english/webp/support/publications/support_materials/pdf/FullListing.pdf (Tables used in support of Xia, X.C. et al. 2004. "Genetic diversity among CIMMYT maize inbred lines investigated with SSR markers. I. Lowland tropical maize." *Crop Science* 2004 Nov-Dec, v. 44, no. 6, p. 2230-2237.)

Exhibit B: Novelty Statement

Variety PH9HP mostly resembles Pioneer Hi-Bred International, Inc. proprietary inbred line PH0PD. Tables 1A and 1B show two sample t-tests on data collected in Tallahassee, FL. The traits collectively show measurable differences between the two varieties.

Exhibit B: Novelty Statement

Variety PH9HP has a greater ear weight (87.1 g vs 46.3 g) than variety PH0PD (Table 1A, 1B).

Variety PH9HP has a smaller leaf angle (30.4 degrees vs 37.6 degrees) than variety PH0PD (Table 1A, 1B).

Variety PH9HP has more secondary tassel branches (2.7 vs 1.4) than variety PH0PD (Table 1A, 1B).

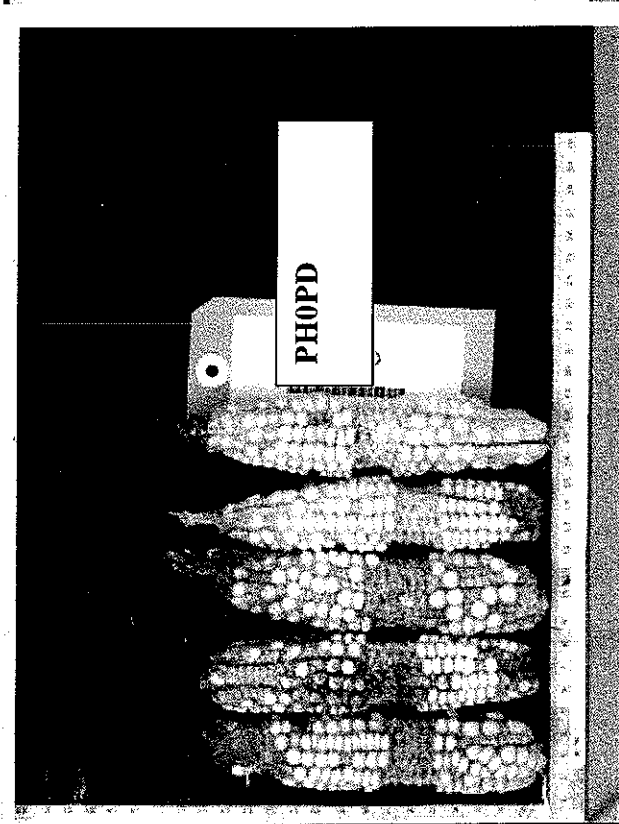
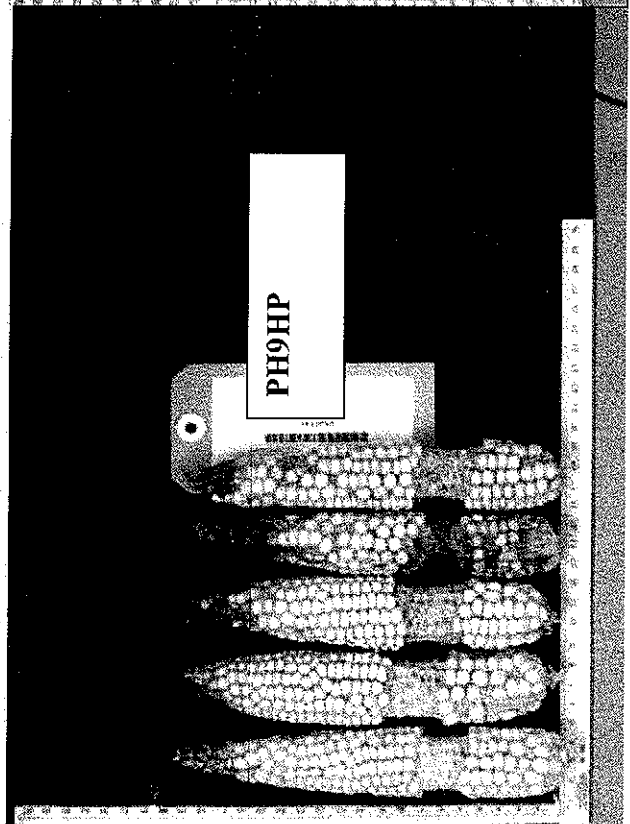
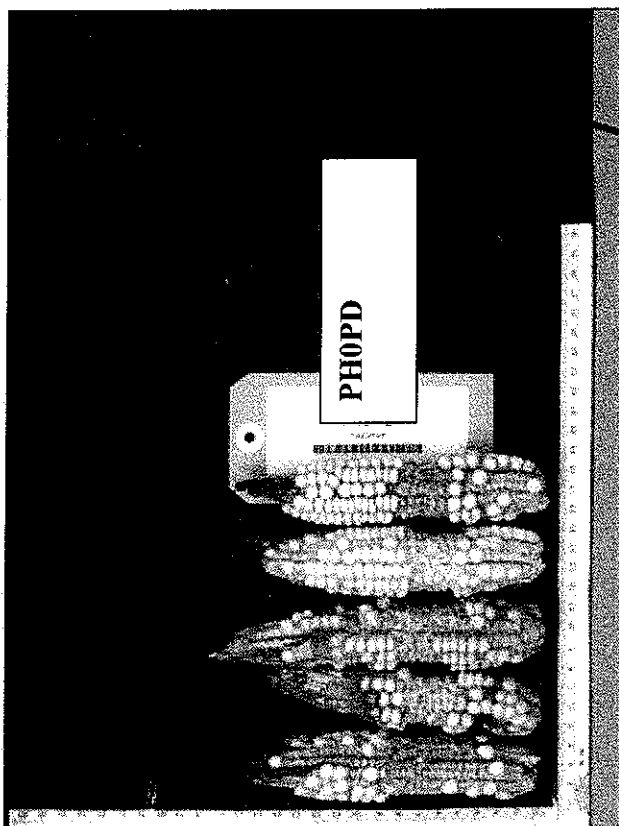
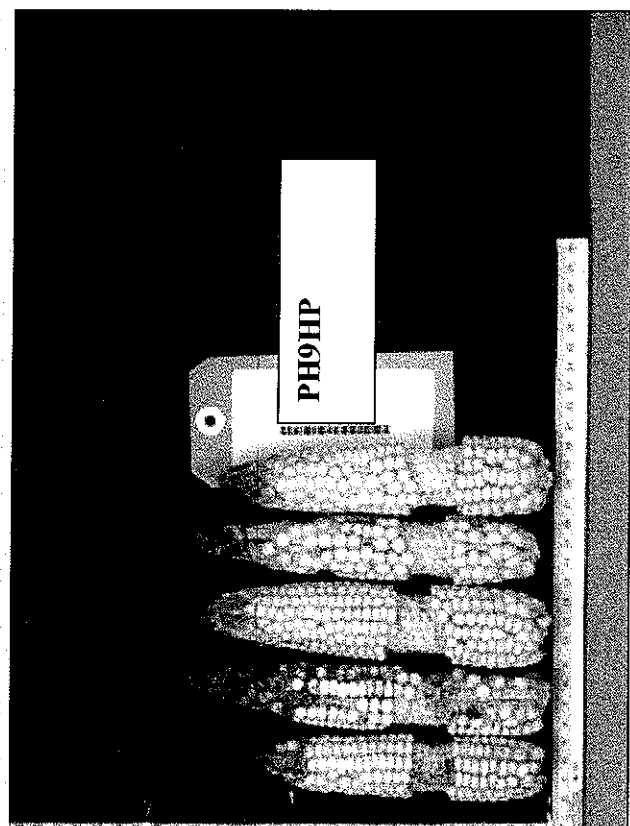


Fig. 1. 2 locations of PH9HP and PH0PD grown near Tallahassee, Florida in 2004 supporting differences between the two varieties for kernel set and subsequently ear weight.

Exhibit B: Novelty Statement Tables

Table 1A: Data from Tallahassee, FL broken out by environment are supporting evidence for differences between PH9HP and PH0PD. Varieties were grown in 2 locations that had different environmental conditions. Environments had different planting dates and were in different fields. A two-sample t-test was used to compare differences between means.

Trait	LOC	VARIETY		COUNT		MEAN		MEAN DIFF	STD DEVIATION		STD ERROR		DF POOLED	t-VALUE	t-POOLED	Prob. (2-tail)
		1	2	1	2	1	2		1	2	1	2				
Ear weight (g)	BM1	PH9HP	PH0PD	5	5	86.8	46.8	40.0	28.279	8.167	12.647	3.652	8	3.0	0.016	
Ear weight (g)	BPVP	PH9HP	PH0PD	5	5	87.4	45.8	41.6	17.827	5.020	7.972	2.245	8	5.0	0.001	
Leaf angle	BM1	PH9HP	PH0PD	5	5	32.0	35.4	-3.4	2.449	2.074	1.095	0.927	8	-2.4	0.045	
Leaf angle	BPVP	PH9HP	PH0PD	5	5	28.8	39.8	-11.0	2.168	3.564	0.970	1.594	8	-5.9	0.000	
Tassel secondary branch number	BM1	PH9HP	PH0PD	5	5	2.6	1.4	1.2	0.894	0.548	0.400	0.245	8	2.6	0.034	
Tassel secondary branch number	BPVP	PH9HP	PH0PD	5	5	2.8	1.4	1.4	0.837	0.548	0.374	0.245	8	3.1	0.014	

200300261

Exhibit B. Novelty Statement Tables

Table 1B: Summary data from Tallahassee, FL across environments are supporting evidence for differences between PH9HP and PH0PD. Environments had different planting dates and were in different fields. A two-sample t-test was used to compare differences between means.

Trait	VARIETY-VARIETY		Count-Count		Mean-Mean		StdDeviation-StdDeviation		StdError-StdError		DF_Pooled		t-Value		Prob_(2-tail)	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Ear weight (g)	PH9HP	PH0PD	10	10	87.1	46.3	40.8	22.288	6.413	7.048	2.028	18	18	5.6	0.000	0.000
Leaf angle	PH9HP	PH0PD	10	10	30.4	37.6	-7.2	2.757	3.596	0.872	1.137	18	18	-5.0	0.000	0.000
Tassel secondary branch number	PH9HP	PH0PD	10	10	2.7	1.4	1.3	0.823	0.516	0.260	0.163	18	18	4.2	0.001	0.001

Exhibit B. ADDENDUM

Discussion

Ear weight represents a significant difference between these 2 inbreds with the data already collected. The ear weight of PH9HP is almost double that of PH0PD at both locations we have described thus far, and we tried to be meticulous to minimize variation. Please include Fig. 1 as additional evidence to support distinctness between PH9HP and PH0PD. By looking at the pictures in Figure 1 below from the 2 locations grown in Tallahassee, Florida you can see the differences in kernel set are clear and subsequently ear weights are different between PH9HP and PH0PD.

The scatter-grain trait is scored based on the ability of a particular variety to establish good uniform seed set on an ear. If not all of the floret positions are pollinated on the ear an ear can appear scattered. Also, environmental conditions such as high temperature that could influence pollen viability could result in scatter-grain seed set. However, some varieties have a tendency to scatter-grain inherently when pollen is not limiting. A score of 9 indicates good seed set (no scatter-grain) and a score of 1 indicates extremely poor seed set (kernels on the ear are extremely scattered or variable).

Although we have grown PH9HP and PH0PD in the southern United States, these white inbreds are very long season maturity for growing in the United States. The long maturity variety grown in this environment can make the seed set more variable due to photoperiod and other environmental factors in the United States environment. Even so, we see value in PVP for this germplasm in the United States based, in part, on the yield of this inbred. Day length and temperatures that vary some from the more adapted tropical environments can impact the vegetative stage as well as the success of pollination during flowering and frequency of kernel abortion during grain fill. For this reason, I would anticipate somewhat higher variability for seed set and other traits.

It appears this may have contributed towards more variability at location BM1. The two locations had different planting dates. Limited ears were harvested at this location. Unfortunately, more ears were not sampled last year from that location. I suspect that would have helped in reducing the variation some. We did include PH9HP in another growing location along with the public check in 2005. Unfortunately, we did not anticipate your additional questions and seed availability for PH0PD was a problem, so we do not have an additional location with PH0PD data this season.

The data in Tables 1A and 1B are from two sample t-tests. These traits in exhibit B collectively show distinct differences between the two varieties.

For all other traits

the results

United States Department of Agriculture, Agricultural Marketing Service
Science and Technology, Plant Variety Protection Office
National Agricultural Library Building, Room 400
Beltsville, MD 20705-2351

OBJECTIVE DESCRIPTION OF VARIETY
CORN (Zea mays L.)

Name of Applicant(s) Pioneer Hi-Bred International, Inc	Variety Seed Source 	Variety Name or Temporary Designation PH9HP
Address (Street & No., or R.F.D. No., City, State, Zip Code and Country) 7301 NW 62nd Avenue, P.O. Box 85, Johnston, Iowa 50131-0085	FOR OFFICIAL USE 	PVPO Number 200300261

Place the appropriate number that describes the varietal characters typical of this inbred variety in the spaces below. Right justify whole numbers by adding leading zeroes if necessary. Completeness should be striven for to establish an adequate variety description. Traits designated by a "*" are considered necessary for an adequate variety description and must be completed.

COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices; describe #25 and #26 in Comments section):

01. Light Green	06. Pale Yellow	11. Pink	16. Pale Purple	21. Buff	26. Other (Describe)
02. Medium Green	07. Yellow	12. Light Red	17. Purple	22. Tan	
03. Dark Green	08. Yellow-Orange	13. Cherry Red	18. Colorless	23. Brown	
04. Very Dark Green	09. Salmon	14. Red	19. White	24. Bronze	
05. Green-Yellow	10. Pink-Orange	15. Red & White	20. White Capped	25. Variegated (Describe)	

STANDARD INBRED CHOICES [Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data]:

Yellow Dent Families:		Yellow Dent (Unrelated):	Sweet Corn:
Family	Members	Co109, ND246	C13, Iowa5125, P39, 2132
B14	CM105, A632, B64, B68	Oh7, T232	
B37	B37, B76, H84	W117, W153R	Popcorn:
B73	N192, A679, B73, Nc268	W182BN	SG1533, 4722, HP301, HP7211
C103	Mo17, Va102, Va35, A682		
Oh43	A619, MS71, H99, Va26	White Dent:	Pipecorn:
WF9	W64A, A554, A654, Pa91	CI66, H105, Ky228	Mo15W, Mo16W, Mo24W

1. TYPE: (describe intermediate types in Comments section) 3 (1=Sweet, 2=Dent, 3=Flint, 4=Flour, 5=Pop, 6=Ornamental, 7=Pipecorn) Flint Like	Standard Inbred Name B73 2 Type
--	---------------------------------------

2. REGION WHERE DEVELOPED IN THE U.S.A.: 5 (1=N.West, 2=N.Central, 3=N.East, 4=S.East, 5=S.Central, 6=S.West, 7=Other)	Standard Seed Source PI 550473 2 Region
---	---

3. MATURITY (In Region Best Adaptability; show Heat Unit formula in "Comments" section):			
DAYS	HEAT UNITS	DAYS	HEAT UNITS
65	1,632.6 From emergence to 50% of plants in silk	55	1,327.9
65	1,647.9 From emergence to 50% of plants in pollen	54	1,299.4
3	73 From 10% to 90% pollen shed	2	57
---	From 50% silk to optimum edible quality	---	---
---	From 50% silk to harvest at 25% moisture	---	---

4. PLANT:	St.Dev.	Sample Size	Mean	St.Dev.	Sample Size
238.3 cm Plant Height (to tassel tip)	8.72	10	246.0	8.84	10
94.2 cm Ear Height (to base of top ear node)	7.06	10	97.4	6.64	10
15.5 cm Length of Top Ear Internode	1.13	10	14.4	1.35	10
0.0 Average Number of Tillers	0.00	2	0.0	0.00	2
1.0 Average Number of Ears per Stalk	0.03	2	1.0	0.02	2
1 Anthocyanin of Brace Roots: 1=Absent, 2=Faint, 3=Moderate, 4=Dark			4		

5/MS
8/9/05

12

5. LEAF			St.Dev.	Sample Size	Mean	St.Dev.	Sample Size
9.2	cm Width of Ear Node Leaf		0.58	10	10.0	0.47	10
85.4	cm Length of Ear Node Leaf		5.89	10	85.6	3.91	10
6.0	Number of leaves above top ear		0.00	10	7.0	0.00	10
30.4	Degrees Leaf Angle		2.76	10	16.8	1.69	10
(Measure from 2nd leaf above ear at anthesis to stalk above leaf)							
4	Leaf Color (Munsell code)	5GY 3/6			4 (Munsell code)	7.5GY 3/4	
Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)							
Marginal Waves (Rate on scale from 1=none to 9=many)							
Longitudinal Creases (Rate on scale from 1=none to 9=many)							
6. TASSEL:			St.Dev.	Sample Size	Mean	St.Dev.	Sample Size
8.3	Number of Primary Lateral Branches		2.00	10	7.9	1.60	10
16.2	Branch Angle from Central Spike		8.74	10	19.3	7.60	10
48.5	cm tassel Length		5.93	10	54.9	2.69	10
(from top leaf collar to tassel tip)							
6	Pollen Shed (Rate on scale from 0=male sterile to 9=heavy shed)				5		
6	Anther Color (Munsell code)	10Y 9/6			7 (Munsell code)	5Y 8.5/4	
2	Glume Color (Munsell code)	5GY 6/6			2 (Munsell code)	5GY 5/6	
Bar Glumes (Glume Bands): 1=Absent, 2=Present							
7a. EAR (Unhusked Data):							
1	Silk Color (3 days after emergence) (Munsell code)	10Y 8/8			1 Munsell code	2.5GY 9/4	
1	Fresh Husk Color (25 days after 50% silking) (Munsell code)	2.5GY 7/6			2 Munsell code	5GY 7/8	
21	Dry Husk Color (65 days after 50% silking) (Munsell code)	2.5Y 8.5/4			21 Munsell code	2.5Y 8.5/4	
1 Position of Ear at Dry Husk Stage: 1=Upright, 2=Horizontal, 3=Pendent							
8 Husk Tightness (Rate on scale from 1=very loose to 9=very tight)							
2 Husk Extension (at harvest): 1=Short(ears exposed), 2=Medium (<8cm), 3=Long (8-10cm beyond ear tip), 4=Very Long (>10cm)							
7b. EAR (Husked Ear Data)			St. Dev.	Sample Size	Mean	St.Dev.	Sample Size
18.5	cm Ear Length		1.58	10	13.7	0.48	10
36.9	mm Ear Diameter at mid-point		2.23	10	45.0	1.94	10
87.1	gm Ear Weight		22.29	10	104.5	11.84	10
13.4	Number of Kernel Rows		1.35	10	17.4	1.35	10
2 Kernel Rows: 1=Indistinct, 2=Distinct							
2 Row Alignment: 1=Straight, 2=Slightly Curved, 3=Spiral							
10.7	cm Shank Length		1.95	10	8.1	0.99	10
3 Ear Taper: 1=Slight, 2=Average, 3=Extreme							
8. KERNEL (Dried):			St.Dev.	Sample Size	Mean	St.Dev.	Sample Size
8.7	mm Kernel Length		0.67	10	10.8	0.79	10
8.2	mm Kernel Width		0.42	10	6.7	0.48	10
5.3	mm Kernel Thickness		0.82	10	4.7	1.06	10
35.9	% Round Kernels (Shape Grade)		0.37	2	17.2	5.88	2
1 Aleurone Color Pattern: 1=Homozygous, 2=Segregating (describe)							
19	Aleurone Color (Munsell code)	5Y 9/1			7 Munsell code	2.5Y 8/12	
19	Hard Endosperm Color (Munsell code)	5Y 9/1			7 Munsell code	10YR 7/12	
3 Endosperm Type: 1=Sweet(su1), 2=Extra Sweet(sh2), 3=Normal Starch, 4=High Amylose Starch, 5=Waxy Starch, 6=High Protein, 7=High Lysine, 8=Super Sweet (se), 9=High Oil, 10=Other							
25.0	gm Weight per 100 kernels (unsized sample)		0.00	2	21.0	1.41	2
9. COB:			St.Dev.	Sample Size	Mean	St.Dev.	Sample Size
23.0	mm Cob Diameter at mid-point		1.63	10	27.8	2.15	10
19	Cob Color (Munsell code)	5Y 9/1			11 Munsell code	10R 6/6	

Note: Use chart on first page to choose color codes for color traits

10. DISEASE RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); leave blank if not tested; leave Race or Strain Options blank if polygenic):

A. Leaf Blights, Wilts, and Local Infection Diseases

- ☐ Anthracnose Leaf Blight (*Colletotrichum graminicola*)
☒ 5 Common Rust (*Puccinia sorghi*)
☐ Common Smut (*Ustilago maydis*)
☐ Eyespot (*Kabatiella zeae*)
☐ Goss's Wilt (*Clavibacter michiganense* spp. *nebraskense*)
☒ 5 Gray Leaf Spot (*Cercospora zeae-maydis*)
☐ Helminthosporium Leaf Spot (*Bipolaris zeicola*) Race _____
☒ 7 Northern Leaf Blight (*Exserohilum turcicum*) Race _____
☒ 7 Southern Leaf Blight (*Bipolaris maydis*) Race _____
☐ Southern Rust (*Puccinia Polysora*)
☒ 5 Stewart's Wilt (*Erwinia stewartii*)
☐ Other (Specify) _____

B. Systemic Diseases

- ☐ Corn Lethal Necrosis (MCMV and MDMV)
☒ 9 Head Smut (*Sphacelotheca reiliana*)
☐ Maize Chlorotic Dwarf Virus (MCDV)
☐ Maize Chlorotic Mottle Virus (MCMV)
☒ 4 Maize Dwarf Mosaic Virus (MDMV) Strain _____
☐ Sorghum Downy Mildew of Corn (*Peronosclerospora sorghi*)
☐ Other (Specify) _____

C. Stalk Rots

- ☐ Anthracnose Stalk Rot (*Colletotrichum graminicola*)
☐ Diplodia Stalk Rot (*Stenocarpella maydis*)
☐ Fusarium Stalk Rot (*Fusarium moniliforme*)
☐ Gibberella Stalk Rot (*Gibberella zeae*)
☐ Other (Specify) _____

D. Ear and Kernel Rots

- ☐ Aspergillus Ear and Kernel Rot (*Aspergillus flavus*)
☒ 6 Diplodia Ear Rot (*Stenocarpella maydis*)
☒ 7 Fusarium Ear and Kernel Rot (*Fusarium moniliforme*)
☒ 8 Gibberella Ear Rot (*Gibberella zeae*)
☒ 8 Other (Specify) _____

- ☐ Anthracnose Leaf Blight
☒ 6 Common Rust
☐ Common Smut
☐ Eyespot
☐ Goss's Wilt
☒ 3 Gray Leaf Spot
☐ Helminthosporium Leaf Spot Race _____
☒ 4 Northern Leaf Blight Race _____
☐ Southern Leaf Blight Race _____
☐ Southern Rust
☐ Stewart's Wilt
☐ Other (Specify) _____

- ☐ Corn Lethal Necrosis
☐ Head Smut
☐ Maize Chlorotic Dwarf Virus
☐ Maize Chlorotic Mottle Virus
☐ Maize Dwarf Mosaic Virus Strain _____
☐ Sorghum Downy Mildew of Corn
☐ Other (Specify) _____

- ☐ Anthracnose Stalk Rot
☐ Diplodia Stalk Rot
☐ Fusarium Stalk Rot
☐ Gibberella Stalk Rot
☐ Other (Specify) _____

- ☐ Aspergillus Ear & Kernel Rot
☐ Diplodia Ear Rot
☒ 6 Fusarium Ear & Kernel Rot
☐ Gibberella Ear Rot
☐ Other (Specify) _____

Application Variety Data

Page 3

Standard Inbred Data

Note: Use chart on first page to choose color codes for color traits.

11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); Leave blank if not tested)	St. Dev.	Sample Size		St. Dev.	Sample Size
<input type="checkbox"/> Banks Grass Mite (<i>Oligonychus pratensis</i>)				<input type="checkbox"/> Banks Grass Mite	
Corn Earworm (<i>Helicoverpa zea</i>)				Corn Earworm	
<input type="checkbox"/> Leaf Feeding				<input type="checkbox"/> Leaf Feeding	
<input type="checkbox"/> Silk Feeding _____ mg larval wt.				<input type="checkbox"/> Ear Damage	
<input type="checkbox"/> Ear Damage				<input type="checkbox"/> Corn Leaf Aphid	
<input type="checkbox"/> Corn Leaf Aphid (<i>Rhopalosiphum maidis</i>)				<input type="checkbox"/> Corn Sap Beetle	
<input type="checkbox"/> Corn Sap Beetle (<i>Carpophilus dimidiatus</i>)				European Corn Borer	
European Corn Borer (<i>Ostrinia nubilalis</i>)				1 st Generation	
1 st Generation (Typically Whorl Leaf Feeding)				2 nd Generation	
2 nd Generation (Typically Leaf Sheath-Collar Feeding)					
Stalk Tunneling: _____ cm tunneled/plant				Fall Armyworm	
Fall Armyworm (<i>Spodoptera frugiperda</i>)				<input type="checkbox"/> Leaf-Feeding	
<input type="checkbox"/> Leaf-Feeding				<input type="checkbox"/> Maize Weevil	
<input type="checkbox"/> Silk-Feeding _____ mg larval wt.					
<input type="checkbox"/> Maize Weevil (<i>Sitophilus zeamais</i>)				<input type="checkbox"/> Northern Rootworm	
<input type="checkbox"/> Northern Rootworm (<i>Diabrotica barberi</i>)				<input type="checkbox"/> Southern Rootworm	
<input type="checkbox"/> Southern Rootworm (<i>Diabrotica undecimpunctata</i>)				Southwestern Corn Borer	
Southwestern Corn Borer (<i>Diatraea grandiosella</i>)				<input type="checkbox"/> Leaf Feeding	
<input type="checkbox"/> Leaf Feeding				<input type="checkbox"/> Two-spotted Spider Mite	
Stalk Tunneling: _____ cm tunneled/plant				<input type="checkbox"/> Western Rootworm	
<input type="checkbox"/> Two-spotted Spider Mite (<i>Tetranychus urticae</i>)				<input type="checkbox"/> Other (Specify) _____	
<input type="checkbox"/> Western Rootworm (<i>Diabrotica virgifera virgifera</i>)					
<input type="checkbox"/> Other (Specify) _____					

12. AGRONOMIC TRAITS:

4 Stay Green (at 65 days after anthesis) (Rate on scale from 1=worst to 9=excellent)	Stay Green
% Dropped Ears (at 65 days after anthesis)	% Dropped ears
% Pre-anthesis Brittle Snapping	% Pre-anthesis Brittle Snapping
% Pre-anthesis Root Lodging	% Pre-anthesis Root Lodging
Post-anthesis Root Lodging (at 65 days after anthesis)	Post-anthesis Root Lodging
4177 Kg/ha Yield of Inbred Per Se (at 12-13% grain moisture)	6078 Yield

13. MOLECULAR MARKERS: (0=data unavailable; 1=data available but not supplied; 2=data supplied.)

<input type="checkbox"/> 1 Isozymes	<input type="checkbox"/> RFLP's	<input type="checkbox"/> RAPD's	<input type="checkbox"/> Other (Specify) _____
-------------------------------------	---------------------------------	---------------------------------	--

REFERENCES:

- Butler, D.R. 1954. A System for the Classification of Corn Inbred Lines. PhD Thesis, Ohio University.
- Emerson, R.A., G.W. Beadle, and A.C. Fraser, 1935. A summary of Linkage Studies in Maize. Cornell A.E.S., Mem. 180.
- Farr, D.F., G.F. Bills, G.P. Chamuris, A.Y. Rossman. 1989. Fungi on Plant Products in the United States. The American Phytopathological Society, St. Paul, MN.
- Inglett, G.E. (Ed) 1970. Corn: Culture, Processing, Products. Avi Publishing Company, Westpoint, CT.
- Jugenheimer, R.W. 1976. Corn: Improvement, Seed Production, and Uses. John Wiley & Sons, New York.
- McGee, D.C. 1988. Maize Diseases. APS Press, St. Paul, MN. 150 pp.
- Munsell Color Chart for Plant Tissues. Macbeth. P.O. Box 230. Newburgh, N.Y. 12551-0230
- The Mutants of Maize. 1968. Crop Science Society of America. Madison, WI.
- Shurtleff, M.C. 1980. Compendium of Corn Diseases. APS Press, St. Paul, MN. 105 pp.
- Sprague, G.F., and J.W. Dudley (Editors). 1988. Corn and Corn Improvement, Third Edition. Agronomy Monograph 18. ASA, CSSA, SSSA, Madison, WI.
- Stringfield, G.H. Maize Inbred Lines of Ohio A.E.S., Bul. 831. 1959.
- U.S. Department of Agriculture 1936, 1937. Yearbook.

COMMENTS (e. g. state how heat units were calculated, standard inbred seed source, and/or where data was collected. Continue in Exhibit D)

Insect, disease, brittle snapping and root lodging data are collected mainly from environment where variability for the trait can be obtained within the experiment.

50/18
8/1/05

Exhibit C. ADDENDUM

The experiment procedures involved two environments with different planting dates, planted in 13 foot rows with 4 rows for each variety. Approximately 12-15 plants emerged in each of 4 rows for a total of around 48 to 60 plants being evaluated. For plant level traits, we sampled 5 representative plants from the middle rows of the 4 row plot (group) of plants at each location. For plot level traits we evaluated the middle rows of the 4 row plot (group) and gave a representative score or average on the 48-60 plants in the group within an experiment. Since these varieties are too late in maturity to characterize in Iowa, we had to perform this trial in Tallahassee, Florida.

The seed set in this environment can be especially variable due to photoperiod and other environmental factors. Day length and temperatures in Tallahassee vary from tropical environments of Mexico or South America where this variety is more adapted, impacting the vegetative data recorded. Varying temperatures or day length could impact the meristem growth during tassel differentiation. Similarly, the meristem differentiation of the ear could be impacted as well as the success of pollination during flowering and frequency of kernel abortion during grain fill. Such variation could have affected number of tassel branches, tassel length, ear weight and number of kernel rows.

B73 is a public stiff stalk variety developed in Iowa (Central US). These data were collected in Tallahassee Florida. B73 may not have been as well adapted to the conditions in Florida as it is to the central corn belt. But, this is the check that was available. Temperature and day length differences (especially during meristem initiation for tassel branch florets and ear spikelets) for this maturity may have contributed to variability for tassel branches, ear weight and number of kernel rows.

We did not have consistent disease and insect pressure in the environments where these two inbreds were grown together. Weighted paired disease and insect evaluations in environments with good disease and insect pressure would be best. Maturity differences make good weighted yield evaluations difficult. In 2004 B73 averaged 6078 kg/ha in 28 US locations. Common rust averaged 6, Fusarium ear rot averaged 6, Gray Leaf Spot averaged 3, and Northern Leaf Blight averaged 4 for B73.

I would be happy to discuss with you in more detail the sampling, experiment design, reporting, and the conscientious evaluations that went into the characterization of these traits. Please update the exhibit C addendum as stated above.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE**EXHIBIT E**
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) PIONEER HI-BRED INTERNATIONAL, INC.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME PH9HP
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 7301 NW 62nd AVENUE P.O. BOX 85 JOHNSTON, IA 50131-0085	5. TELEPHONE (include area code) 515-270-4051	6. FAX (include area code) 515-253-2125
7. PVPO NUMBER 200300261		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain: ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO if no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☒ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PH9HP is owned by Pioneer Hi-Bred International, Inc.

Pioneer Hi-Bred International, Inc. (PHI), Des Moines, Iowa, and/or its wholly owned subsidiary Pioneer Overseas Corporation (POC), Des Moines, Iowa, is the employer of the plant breeders involved in the selection and development of PH9HP. Pioneer Hi-Bred International and/or Pioneer Overseas Corporation has the sole rights and ownership of PH9HP pursuant to written contracts that assign all rights in the variety to PHI and/or POC at the time such variety was created. No rights to this variety are retained by any individuals.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal employment opportunity provider and employer.